2014 Elk River, West Virginia Chemical Spill
Air & Water Division Briefing Paper

The Facility & the Leaky Tank

- Etowah River Terminal, owned by Freedom Industries, is located on the Elk River in Charleston, WV.
- Freedom Industries acts as a broker, purchasing bulk chemicals and selling them to industrial users.
- **No processing or manufacturing on site**, just mixing and storage. (Total capacity is 4 million gallons).
- On Jan 9, 2014, State air inspectors inspected the facility in response to odor complaints and find the leak.
- About 7,500 gallons are estimated to have leaked from a 40,000 gallon capacity tank during the spill.

The Chemicals that Leaked from the WV Storage Facility

- "Crude MCHM" is a mix of six compounds, including 4-methylcyclohexanemethanol, a cyclohexane with methane and methanol functional groups.
    - The only HAP in the mixture is methanol, which accounts for 1% by weight.
    - Crude MCMH is used at some coal processing plants as a frothing agent to improve the efficiency of removing impurities. **It is mainly used to process coking coal for metallurgy rather than steam coal for power plants.**
- "PPH, stripped" (estimated to be 7.3% of the material in the leaking tank) is a proprietary blend thought to contain DiPPH Glycol Ether, and PPH Glycol Ether (both HAPs, though not very volatile)

Chemical Storage in Region 5

- In Illinois alone, at least 49 facilities offer storage of liquid chemicals operating on a commercial scale.[1]
- For example, one of the largest is Fort Transfer located in Morton, Illinois
    - Total capacity of 2.6 million gallons
    - No air permit or air inspections. (Possibly subject to NSPS Subpart Kb and others, see below)
- Because of the way SIC/NAICS codes are set up, it is difficult to use them to identify bulk chemical storage facilities, though large ones can be identified through commercial data.

Regulatory Authority Applicable to Storage Facilities

- Multiple regulations for storage tanks at major sources of HAPS:
    - Part 63, Subpart EEEE: Organic Liquids Distribution
    - Part 63, Subpart OO: National Emission Standards for Tanks—Level 1
    - Part 63, Subpart WW: National Emission Standards for Tanks—Control Level 2
- NSPS, applies to non-HAP VOCs, but lots of restrictions on applicability
- Part 60, Subpart Kb: Volatile Organic Liquid Storage Vessels for Which Construction, Reconstruction, or

Modification Commenced After July 23, 1984. (The Etowah facility would not have been subject due to age.)

- General Duty Clause from 112(r) – tanks that are leaking chemicals to the air can potentially be identified with an IR camera and may be subject to 112(r), if the material is listed or is "extremely hazardous."[2]
- No area source MACTs for storage facilities
- Region 5 is currently participating in a National Tank Enforcement Initiative (with HQ OECA and others) to identify tank farms in sensitive areas, standardize inspection methods and develop enforcement cases. The plan is based on using available technology (such as FLIR cameras) to identify leaking hydrocarbons.
- These facilities are required to have NPDES permits for the discharge of Industrial Stormwater.
    - Most such permits are in the form of NPDES industrial stormwater general permits;
    - In Region 5, unless the facility is on Tribal lands the permits are issued by the States;
    - EPA has a "multi sector general permit" (MSGP) for areas where EPA is the permitting authority;
    - Spill prevention measures could be part of the industrial storm water requirements. For example, EPA's current draft MSGP, requires facilities subject to it to: minimize exposure; implement spill prevention and response procedures; and conduct routine visual inspections.

Coal Preparation Background

- Coal preparation (also called washing, cleaning or beneficiation) removes sulfur, ash, rock and other impurities, resulting in a coal product with higher thermal energy and less potential air pollutants.
- Coal preparation utilizes a variety of unit operations designed to take advantage of the difference in density between coal and rocks, soil and other impurities.
- Because coal preparation is water intensive, the plants are typically designed as closed loop utilizing storage ponds or impoundments and recycling water. However, they also typically have permitted outfalls and discharges that occur by seepage through impoundment walls.
- At some plants, fine coal is processed using froth floatation. In this process, chemical agents are added to a mixture of coal and water. The agents are designed to enhance the physical separation of coal from impurities by selectively attaching to the coal particles and causing the particles to float in a more efficient manner.
- See attached map for the location of coal preparation facilities in Region 5. Often smaller mines transport raw coal to regional coal preparation facilities, and larger mines have co-located coal preparation facilities.
- According to a 2013 industry survey, there are 17 coal preparation plants in operation in Illinois, 14 in Indiana, and 21 in Ohio.[3]

Regulatory Authority Applicable to Coal Preparation Plants

- The NSPS for coal preparation plants (Subpart Y) was promulgated in 1976. The standards specify emission limits for PM from thermal dryers and pneumatic cleaning equipment sources; and opacity limits for fugitive

emissions. They do not address chemical washing or chemical storage.

- AP-42 establishes emission factors for various physical coal cleaning processes (1995).
- The construction of chemical storage facilities, coal preparation plants and associated impoundments that result in the discharge of dredged and fill material into waters of the US requires a CWA 404 Permit.
- Federal effluent limitations guidelines (40 CFR 434) are applicable to coal mining and preparation facilities. The ELG's establish technology based limitations for iron, manganese, pH, and TSS.
- According to EPA's ELG development document written in 1982, 292 out of 458 prep plants nationwide were utilizing froth floatation at that time.[4]
- NPDES permitting for coal preparation facilities varies across the three states.
- None of the Region 5 states require that facilities monitor discharges from prep plants for parameters which may be present due to the use of chemicals in the coal preparation process.
- In Ohio, there have been slurry spills from an impoundment that accepts waste from prep plants utilizing froth floatation. OEPA collected samples and found 17 semi-volitile organic compounds to be present in the slurry.

---

[1] According to industry data from tankterminals.com

[2] According to 112(r), the owners and operators of sources producing, processing, handling, or storing substances listed pursuant to Section 112(r)(3), or any other extremely hazardous substance, "have a general duty... to identify hazards which may result from such releases using appropriate hazard assessment techniques, to design and maintain a safe facility taking such steps as are necessary to prevent releases, and to minimize the consequences of accidental releases which do occur."

[3] http://coal.epubxp.com/i/197499/2

[4]USEPA. Development Document for Final Effluent Limitations Guidelines New Source Performance Standards, and Pretreatment Standards for the Coal Mining Point Source Category. 1982